

REMARKS

Claims 21 – 52 are in the instant application. Claim 51 has been cancelled without prejudice to reduce the issues. Claims 38, 50 and 52 have been amended for the first time, and claim 40 has been amended for the second time, to more positively recite applicants' invention. No claims have been allowed.

Claims 38 – 42 and 50 – 52 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Claims 39 – 42 are either directly or indirectly dependent on claim 38. Applicants respectfully traverse the rejection claims 38 – 42 and 50 – 52 under 35 U.S.C. 112, first paragraph; however, to reduce the issues, the following action has been taken. Claim 51 has been cancelled without prejudice, and claims 38, 40, 50 and 52 have been amended to include, among other things, in one form or another, the portions of applicants' specification referenced in paragraphs 2 – 4 of the Office Action (paragraphs 2 – 4 discussed the bases for the rejection of claims 38 – 42, 50 and 52 under 35 U.S.C. 112, first paragraph).

Applicants respectfully submit that amended claims 38, 40, 50 and 52 meet the requirements of 35 U.S.C. 112, second paragraph. Further, applicants respectfully submit that the amendments to claims 38, 40, 50 and 52 do not add new subject matter and do not require additional searching. Based on the foregoing, applicants respectfully request consideration of proposed claims 38 – 42, 50 and 52 and withdrawal of the rejection of claims 38 – 42, 50 and 52 under 35 U.S.C. 112, first paragraph.

Claims 21 – 50 and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,110,662 to Depauw et al. (hereinafter also referred to as "Depauw"). Applicants have considered the reasons put forth by the Office Action in paragraph 7 of the Office Action to support the rejection of Claims 21 – 50 and 52 under 35 U.S.C. 102(b) as being anticipated by Depauw. Applicants respectfully traverse the rejection of

claims 21 – 50 and 52 under 35 U.S.C. 102(b) as being anticipated by Depauw and request reconsideration thereof. Claims 21, 43, 48 and 51 are independent claims, and claims 22 – 42, 44 – 47, 49 and 50 are dependent on claim 21.

The Office Action alleges that Depauw discloses that metal may be deposited in sub-oxide or even metallic state (paragraph bridging columns 4 and 5 of Depauw). Applicants have studied Depauw and respectfully submit that the discussion in the paragraph in Depauw bridging columns 4 and 5 is the identification of a defect or limitation in the coating of the product or panel of Depauw and that the defect or limitation does not affect the benefits realized, if any are realized, by the practice of Depauw's invention. The defect or limitation occurs for reasons unknown to, or known to but not disclosed by, Depauw and are eliminated in any subsequent heat treatment of the coated panel, i.e. the heating tends to complete oxidize any residual metal or sub-oxides formed during the sputter deposition of the films.

Applicants support their position that the discussion in Depauw of residual metal or sub-oxide in coating is a defect or limitation by the fact that Depauw does not teach how to obtain a sub-oxide or residual metal in the films of the coated product during the coating deposition. Further, Depauw discloses that the defect or limitation is eliminated when the coated product is heated. Still further, the only discussion regarding the sub-oxide and residual metal found by applicants is in the paragraph bridging columns 4 and 5 of Depauw; Depauw makes no other mention or reference to the sub-oxide or residual metal in the coating films. Still further, unlike applicants' discussion of their invention, there is no discussion in Depauw of the benefits of depositing an amorphous metal film, and there is no disclosure in Depauw of how a residual metal or sub-oxide can be obtained if there is recognition of the benefits of an amorphous metal film.

Based on the foregoing, applicants respectfully submit that the residual metal and sub-oxide in the films of Depauw is not the beneficial amorphous metal film disclosed and claimed by applicants. Depauw considers the presence of the residual metal and sub-oxide as a random

event and does not disclose how they or it are (is) obtained. Applicants on the other hand disclose in their application how an amorphous metal film may be obtained and the benefits of their patentably novel film. Since Depauw does not disclose how his film having residual metal and sub-oxides is obtained, a comparison between the Depauw's coatings having residual metal and sub-oxides films and applicants' coating having the amorphous metal film is difficult to make. However, for the sake of discussion only, and without any admissions thereto, applicants in the following discussion consider the residual metal and sub-oxides in the coating film of Depauw to be similar to applicants' beneficial amorphous metal film.

Would an artisan practicing the invention of Depauw make the coated product recited in applicants' claims? Most likely not. Depauw has uncontrolled coating deposition when a metal is sputtered in a reactive atmosphere. Therefore the random product of Depauw would have a coating having a residual metal or sub oxide film over a residual meal or sub-oxide film. Applicants on the other hand claim a metal oxide film over an amorphous metal film. Depauw discloses that when a metal is sputtered in an atmosphere having reactive and non-reactive gases you may occasionally obtain a film that has a residual metal or sub-oxide. Applicants in the discussion of their invention have shown that their amorphous metal film is deposited when certain conditions are met (see Fig. 3 of the instant application and discussion in the specification relating thereto). Most likely when the system of Depauw is set up to sputter a metal in an oxygen-containing atmosphere and the sputtered metal film has residual metal or sub-oxide, it follows that all subsequent films sputter in the atmosphere will have residual metal or a sub-oxide in the deposited film. More particularly, the product of Depauw will have a film having residual metal or a sub-oxide over a film having a residual metal or a sub-oxide. No product made by Depauw on the sputter equipment set up by the practice of Depauw will have applicants' coated product of an amorphous metal film having a metal oxide film over the amorphous metal film. In the instant when the system is set up to deposit only metal oxide films, the product of Depauw will have a metal oxide film over

a metal oxide film; there would be no amorphous metal film having a metal oxide film over the amorphous metal film.

Based on the foregoing, applicants respectfully submit that Depauw does not anticipate applicants' claimed invention and respectfully request withdrawal of the rejection of claims 21 – 50 and 52 under 35 U.S.C. 102(b) as being anticipated by Depauw.

Claims 21 – 50 and 52 are rejected under 35 U.S.C 103(a) as being unpatentable over U.S. Patent No. 4,522,844 to Khanna et al. (hereinafter also referred to as "Khanna") in view of Depauw. The Office Action alleges that Khanna discloses a coated product comprising a substrate and a film sputtered from a metal target in an atmosphere comprising inert gas and a reactive gas resulting in a metal film having a amorphous structure (column 1, lines 28 – 52, column 2, lines 33 – 44, column 3, lines 31- 33, of Khanna). The Office Action states that Khanna does not mention depositing one or more metal oxide films over the amorphous metal film, and alleges that Depauw discloses that it is known to deposit one or more metal oxide films (such as titanium oxide) over an amorphous metal film to form a corrosion resistant glass coated article that reflects infrared light (column 8, lines 42 – 57). The Office Action concludes by alleging that it would have been obvious to one having ordinary skill in the art at the time the invention was made to deposit one or more metal oxide films over the amorphous metal film of Khanna, as taught by Depauw, because the coated glass article could be used to reflect infrared light.

Applicants respectfully traverse the rejection of claims 21 – 50 and 52 under 35 U.S.C 103(a) as being unpatentable over Khanna in view of Depauw and request reconsideration thereof. Claims 21 – 50 and 52 and Depauw were discussed above.

Khanna discloses a method of coating a substrate with an amorphous metal by bombarding a solid piece of the metal with ions of an inert gas in the presence of a magnetic field to provide a vapor of the metal. The vapor of the metal is deposited on the substrate at a sufficiently low gas

pressure so that there is formed on the substrate a thin, uniformly thick, essentially pinhole-free film of the metal.

The Office Action alleges that one having ordinary skill in the art at the time the invention was made would deposit one or more metal oxide films over the amorphous metal film of Khanna, as taught by Depauw, because the coated glass article could be used to reflect infrared energy. Applicants respectfully submit that the product of Khanna standing alone with a metal film can be used to reflect infrared light and would not need the metal oxides of Depauw to reflect infrared energy. Further, metal oxide films are used with films that reflect infrared energy but are not usually used to reflect infrared energy because they are poor reflectors of infrared energy (see column 5, lines 8 – 20, of Depauw). Further, applicants submit that an artisan would not combine the teachings of Khanna and Depauw. Khanna discloses that his coating has a homogenous, uniform, dense, film having a smooth mirror-like surface and that the corrosion resistant coating of Khanna is a replacement for chrome metal coating. (see column 1, lines 5 – 25, of Khanna.) One skilled in the art would have no basis to sputter coat a metal oxide coating of Depauw over the coating of Khanna. Any coatings of Depauw over the coating of Khanna would reduce the luster and also would not have the corrosion resistance of the coating of Khanna. Further, as mentioned in Depauw, his coating films, in particular zinc oxide are not chemically durable (column 6, lines 46 – 66). Still further there are questions of whether the metal oxide layers of Depauw would adhere to the smooth mirror liked finish of the coating of Khanna. In column 6, lines 21 – 28, Depauw discusses that not all metal oxides have the same level of adhesion, for example titanium dioxide is selected because it provides a strong bond between the substrate and the first tin oxide layer. Applicants respectfully submit that there are too many unknowns for one skilled in the art to combine Khanna and Depauw based only on their disclosure, and if a combination is made, it is made using hindsight.

Based on the foregoing, applicants respectfully request withdrawal of the rejection of claims 21 – 50 and 52 under 35 U.S.C 103(a) as

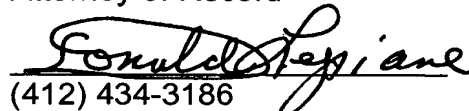
being unpatentable over Khanna in view of Depauw and request allowance of claims 21 – 50 and 52.

This amendment represents a sincere effort to place the application in condition for allowance. In the event issues remain, the Examiner is invited to call the undersigned to discuss those issues before further action is taken on the case.

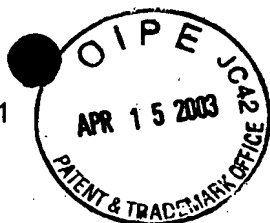
Attached hereto is a marked-up version of the amendments to the claims made by the instant amendment. The attached page is captioned **"Version with markings to show changes made"**.

Respectfully submitted,

DONALD C. LEPIANE
Registration No. 25,996
Attorney of Record


(412) 434-3186

Pittsburgh, Pennsylvania
April 10, 2003



RECEIVED
APR 16 2003
TC 1700

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Cancel claim 51 without prejudice. Please amend claims 38, 50 and 52 for the first time and claim 40 for the second time as follows:

Claim 38 (Amended) The product in accordance with claim 36, wherein the [further comprising a] metal oxide film is deposited on the amorphous metal film prior to thermal oxidation of the amorphous metal film.

Claim 40. (Twice Amended) The product in accordance with claim 38, wherein the substrate is glass, the metal in each film is titanium, the density of the thermally oxidized amorphous metal [oxide film deposited over the metal] film is 4 grams per cubic centimeter and the refractive index of the thermally oxidized amorphous metal [oxide] film is 2.5.

Claim 50. (Amended) Product in accordance to Claim 47, wherein the thermally oxidized amorphous metal [oxide] film is composed of crystalline metal oxide.

Claim 52. (Amended) Product in accordance to [The coated product of] Claim 50, wherein the thermally oxidized amorphous [crystallized] metal [oxide] film is a titanium oxide film with a crystalline structure having a density greater than 3.4 g/cm³.